

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A control system having a central digital controller having a digital controller frame rate and a command signal, a motor, and a motor controller in communication with the central digital controller and the motor, the motor controller having a motor controller frame rate higher than the digital controller frame rate, the control system comprising:

a signal conditioner adapted to condition the command signal so as to generate a modified command signal at the motor controller frame rate; and

wherein the modified command signal is formed from one of:

the signal conditioner performing an interpolation of the command signal over a plurality of frames, and calculating a moving average at the frame rate of the motor controller; and

the signal conditioner performing a first order hold, and filtering the first order hold.

2. (Cancelled)

3. (Original) The control system of claim 1, wherein the signal conditioner comprises a computer readable medium having computer readable program code embodied thereon.

4. (Currently Amended) The control system of claim 3, wherein the computer readable code, when executed, calculates [[a]] the moving average at the frame rate of the motor.

5. (Cancelled)

6. (Currently Amended) The control system of claim [[5]] 1, wherein the filtering is performed by a filter comprises comprising a first order filter.

7. (Currently Amended) The control system of claim [[5]] 6, wherein:
the filter has a breakpoint; and wherein
the breakpoint is selected to negate any high frequency gain increase
introduced by the first order hold.

8. (Currently Amended) The control system of claim [[5]] 1, wherein the first order hold comprises a linear extrapolation of the command signal of the digital controller over a plurality of frames.

9. (Original) The control system of claim 8, wherein the linear extrapolation comprises the use of the last two command signals of the digital controller and has a starting point being the most recent command signal of the digital controller.

10. (Currently Amended) The control system of claim [[3]] 1, wherein the computer readable medium is stored on the motor controller.

11. (Currently Amended) An apparatus comprising:

a computer readable medium having computer readable program code embodied thereon, the computer readable program code, when executed, ~~implementing on a computer a method of~~ conditioning a command signal generated by a central digital controller having a digital controller frame rate prior to its application to a motor controller having a motor controller frame rate higher than the digital controller frame rate, ~~the method including and~~ modifying the command signal to produce a modified command signal at the motor controller frame rate; and

wherein modifying the command signal comprises one of:

interpolating the command signal over a plurality of frames; and

linearly extrapolating the command signal from the digital controller over a plurality of frames and filtering the linearly extrapolated command signal.

12. (Cancelled)

13. (Currently Amended) The apparatus of claim 11, wherein the ~~method of~~ conditioning comprises calculating a moving average at the frame rate of the motor controller.

14. (Cancelled)

15. (Currently Amended) A control system, comprising:

a central digital controller having a command signal and a digital controller frame rate;

a motor controller having a motor controller frame rate higher than the digital controller frame rate; and

a signal conditioner adapted to condition the command signal to produce a modified command signal at the motor controller frame rate;

the signal conditioner adapted to produce the modified command signal by one of:

an interpolation of the command signal over a plurality of frames; and

performing a first order hold and filtering the first order hold.

16. (Cancelled)

17. (Original) The control system of claim 15, wherein the signal conditioner comprises a computer readable medium having computer readable program code embodied thereon.

18. (Currently Amended) The control system of claim [[15]] 17, wherein the computer readable code, when executed, calculates a moving average at the frame rate of the motor controller.

19. (Original) The control system of claim 17, wherein the computer readable medium is stored on the motor controller.

20. (Cancelled)

21. (Currently Amended) The control system of claim [[20]] 15, wherein the filter comprises filtering is accomplished by implementing a first order filter.

22. (Currently Amended) The control system of claim [[20]] 15, wherein the first order hold comprises a linear extrapolation of the command signal over a plurality of frames.

23. (Original) The control system of claim 22, wherein the linear extrapolation comprises the use of the last two command signals of the digital controller and has a starting point being the most recent command signal of the digital controller.

24. (Currently Amended) The control system of claim [[20]] 15, wherein the filtering is accomplished through the use of a filter having a breakpoint, and wherein the breakpoint is selected to negate [[any]] a high frequency gain increase introduced by the linear extrapolation.

25. (Currently Amended) A method of conditioning a command signal generated by a central digital controller having a digital controller frame rate prior to its application to a motor controller having a motor controller frame rate higher than the digital controller frame rate, the method comprising:

conditioning the command signal to produce a modified command signal at the motor controller frame rate; and

performing the conditioning of the command signal by one of:

interpolating the command signal over a plurality of frames; and

linearly extrapolating the command signal of the digital controller over a plurality of frames and filtering the linearly extrapolated command signal.

26. (Cancelled)

27. (Currently Amended) The method of claim 25, wherein the step said interpolating the command signal over a plurality of frames of conditioning comprises calculating a moving average at the frame rate of the motor controller.

28. (Cancelled)

29. (Currently Amended) The method of claim [[28]] 25, wherein the step of said filtering comprises selecting a breakpoint to negate [[any]] a high frequency gain increase introduced by the step of said linear extrapolation.